
Space Weather Forecast

Issued on Wednesday, 12 April 2023 at 13:22 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of M-class flares (R1-R2 Minor-Moderate radio blackouts) throughout, slight chance of X-class flares (R3 Strong radio blackouts).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low with continued Common-class activity. There are currently eight sunspot regions on the visible disc. The collection of spots in the southern disk remains the largest region. The new collection of spots near the southeast limb presents difficulties in classification but appears reasonably large and complex at this stage. The smaller spot proceeding it is tentatively recorded as an unnumbered separate development, though some connection between the systems is evident. All other spots small or relatively simple at this stage.

There have been no Earth-directed Coronal Mass Ejections (CMEs) observed in available imagery in the past 24 hours, though investigation is ongoing towards two features.

Solar Wind / Geomagnetic Activity: The solar wind has declined from a fast wind enhancement over the last 24 hours with slightly elevated levels initially 450km/s and are now Slow-Ambient at around 360km/s. The total Interplanetary Magnetic Field was at Weak levels. The important north-south component remained Weak and mostly northward directed. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels, with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary.

Solar Activity: Solar activity is expected to be Low to Moderate, with a chance of further isolated Moderate-class flares and a slight chance of isolated Strong-class flares.

Solar Wind / Geomagnetic Activity: There are currently no expected Earth-directed CMEs (coronal mass ejections), although there is a low possibility of a glancing arrivals through the period from several small eruptions in recent days. A further filament eruption from the SW disk early on the 12 April is also currently being analysed. Solar winds may be slightly elevated given further coronal hole sourced enhancements, however any geomagnetic activity is likely to remain limited. Geomagnetic activity expected to be generally Quiet conditions throughout, with isolated Unsettled spells likely and a slight chance of Active intervals, mostly associated with potential transitory CME impacts.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain at background levels, with no solar radiation storms anticipated.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	5	5	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	50	50	50	50
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)